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BACILLARY WHITE DIARRHŒA OF CHICKS.

By THOMAS DALLING, M.R.C.V.S., AND H. R. ALLEN, M.R.C.V.S.,

Wellcome Physiological Research Laboratories, Beckenham, Kent.

SUMMARY of paper read at the Eighth Annual Poultry Conference, Harper-Adams Agricultural College, Newport (Salop), on August 7, 1924.

The present work on bacillary white diarrhœa at the Wellcome Physiological Research Laboratories was begun early this year. Bacteriological examination of chicks received from Scotland and England resulted in the isolation of twenty-seven strains of *B. pullorum* from yolk sac, liver, blood, spleen and lungs. In one case *B. pullorum* was got from lungs only, all other organs appearing normal, an interesting fact in view of the prevalence of so-called "brooder pneumonia."

The following experiments have been carried out in relation to the reproduction of bacillary white diarrhœa:—

1. *Subcutaneous inoculation of a living culture will cause death of the chick.* Two chicks each received a subcutaneous inoculation of a living culture of *B. pullorum*: they became obviously ill on the second day, and died on the fourth and fifth days respectively. *B. pullorum* was recovered from heart-blood and liver.

2. *Feeding of living culture by mouth will produce bacillary white diarrhœa.* (a) Three day-old chicks were fed 0·5 c.c. of an agar culture of *B. pullorum* in saline (1,000 mill. per c.c. strong): all died between the second and fourth days.

(b) Three chicks similar to above were fed with broth culture of *B. pullorum* instead of agar culture. All died between fourth and fifth days later. In (a) and (b) *B. pullorum* was recovered from the heart-blood and liver.

3. *Small amounts of culture will produce bacillary white diarrhœa.*

Chicks.	Dose of Culture.	Results.
3	0·1 c.c. 1,000 m. per c.c. emulsion	3 dead, second and fourth days
2	1/100 dose	2 dead, sixth day.
2	1/1,000 dose	2 dead, sixth day.
2	1/10,000 dose	1 dead, sixth day.

4. *Ages of chicks susceptible.*

Age when fed.	No. fed.	Died.
1 day	3	3
2 days	3	3
3 days	3	3
4 days	3	3
5 days	3	1
6 days	3	0

5. *Time between infection and appearance of disease.* Experiments showed that symptoms of disease appear in from twenty-four hours to three days following ingestion of the culture. In one case a period of ten days elapsed. Deaths occur in twenty-four hours to five days following the appearance of symptoms.

Sources of infection discussed in the paper are: (a) Through the egg from the "carrier" hen. (b) Chick to chick. (c) Indirect methods. (d) "Carrier" hens infecting "normal" hens. (e) Spread through the male bird. (f) Feeding chicks on boiled eggs from incubator. Experiments are in progress to clear up these points; the following only have been concluded:—

1. *Chick to chick.*

	Chicks fed.	Deaths.	Chicks in Contact.	Deaths.
(a)	3	3	6	4
(b)	3	3	6	1

Chicks were fed when one day old, and the in-contact chicks were placed with them when one day old.

This experiment also shows the effects of crowding chicks when exposed to infection. Group (a) were crowded in a small box; Group (b) had ample accommodation.

2. *Retention of infection by litter, etc.*

May 19, 1924.—Two chicks in box fed with culture *B. pullorum*. Both died. Box left untouched.

June 19, 1924.—Three chicks placed in box. Two died from bacillary white diarrhœa, *B. pullorum* being recovered from them.

The view is held in this country that there may be several diseases grouped under the term bacillary white diarrhœa showing identical clinical symptoms and post-mortem lesions.

Diagnosis of "carrier" fowls is being worked out.

Serum agglutination tests have been made on large numbers of birds, and experiments are in progress to verify the reliability of this test as a means of eradicating the disease. Egg albumin agglutination tests are also in progress and favourable results are

being got. Intradermic testing with filtrates is being carried out in conjunction with serum and egg albumin agglutination tests.

The laboratories now possess an experimental flock of (*a*) high titre agglutinators, (*b*) low titre agglutinators, and (*c*) normal birds. These are being bred from in various ways, and it is anticipated that results of such breeding will be available by next spring.

It will be obvious that most of this work was planned on the lines of the well-known American researches.

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